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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,140	09/17/2003	Attila Bicsak	915-001.019	7193

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WARE FRESSOLA VAN DER SLUYS &
ADOLPHSON, LLP
BRADFORD GREEN, BUILDING 5
755 MAIN STREET, P O BOX 224
MONROE, CT 06468

EXAMINER
WOOD, WILLIAM H

ART UNIT	PAPER NUMBER
2193	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/22/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>27 October 2006</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-5 and 7-17</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-5 and 7-17</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some *   c)☐ None of:

       1.☐ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____.

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____ .

DETAILED ACTION

Claims 1-5 and 7-17 are pending and have been examined.

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35

U.S.C. 102 that form the basis for the rejections under this section made in

this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2.   Claims 1-10 are rejected under 35 U.S.C. 102(a) as being anticipated by

Sutter et al., "Sifting out the Mud: Low Level C++ Code Reuse".

Claim 1

Sutter disclosed a method *(page 277, section 3, "abstracting multiple-occurring*

instruction sequences"; pages 281-283, section headings) comprising:

creating a control flow graph of <u>a computer</u> program <u>having instruction</u>

<u>sequences</u>, said <u>control</u> flow graph including basic blocks of instructions

(figures 2 and 3; page 281, section 4.2),

traversing through the basic blocks in order to detect multiple

occurrences of a same instruction sequence *(page 281, right column, last*

paragraph to page 282, four bulleted items; page 283, section 4.3),

creating a function including a longest sequence <u>of last instruction</u> <u>sequences</u> common to at least two <u>basic blocks, said longest sequence</u> from a plurality of sequences <u>of last instruction sequences common to said at least</u> <u>tow basic blocks and</u> having a common instruction sequence of equal or shorter length compared to said longest sequence *(page 283, right column, first paragraph, "larger blocks are greedily abstracted first"; page 283, section 4.3, third paragraph, "pass over the whole code is applied for all possible instruction sequence lengths we want to abstract, starting with the longest sequences and ending with the shortest one")* <u>said longest sequence including the equal or</u> <u>shorter length sequences of said plurality of sequences</u> *(the longest must by definition contain shorter common sequences of at least equal value)*, and

replacing the original occurrences of said instruction sequences in said plurality of sequences with a reference to a proper position in said created function *(page 277, section 3, "all occurrences of the sequence are replaced by calls to that single procedure")*.

<u>Claim 2</u>

Sutter disclosed a method of claim 1, wherein the blocks are traversed in a direction opposite to execution of said blocks *(page 279, left column, second bulleted item, "[I]f the blocks are not identical, the number of identical instructions going backwards from the exit points of the blocks is added ..."* thus

opposite traversal of blocks).

Claim 3

Sutter disclosed a method of claim 1, wherein said proper position is the position from which onward the sequence in the function matches with the original occurrence of the replaced instruction sequence *(page 277, section 3, "all occurrences of the sequence are replaced by calls to that single procedure"; page 281, section 4.1, last paragraph).*

Claim 4

Sutter disclosed a method of claim 1, wherein said reference is substantially a function call or a branch instruction *(page 277, section 3, "all occurrences of the sequence are replaced by calls to that single procedure"; page 281, section 4.1, last paragraph).*

Claim 5

Sutter disclosed a method of claim 1, wherein said created function contains substantially the at least two basic blocks whereto said longest sequence belongs *(page 283, right column, bulleted item 2, "sequences are placed in separate basic blocks").*

Claim 6

Sutter disclosed a method of claim 1, wherein said instruction sequences comprise the last instructions of the corresponding block *(page 283, section 4.3, first paragraph, "abstracting partially matched basic blocks involved two important special cases: saves and restores ... [m]ost of the time ... the restores occur in blocks ending with a return instruction").*

Claim 7

Sutter disclosed a method of claim 1, wherein after creating the flow graph said basic blocks are divided into a plurality of block sets, said blocks in different sets comprising no common instruction sequences *(page 283, second bulleted item, "sequences are placed in separate basic blocks").*

Claims 8-10·

The limitations of claims 8-10 correspond to the limitations of claim 1 and as such are rejected in the same manner. Computers and memory demonstrated in the first paragraph of section 1 on page 275.

Claim 11-17

The limitations of claims 11-14 correspond to the limitations of claims 1-5 and 7 and as such are rejected in the same manner.

Response to Arguments

3.   Applicant's arguments filed 27 October 2006 have been fully considered but they are not persuasive. Applicant argues **Sutter** fails to disclose "creating a function including a longest sequence of last instruction sequences common to at least two basic blocks" as recited in claim 1. Applicant further states **Sutter** does not specifically disclose, "the creation of a function that includes a longest sequence of last instruction sequences common to at least two basic blocks" (Response: page 9, first paragraph). However, upon review **Sutter** it is apparent at least at least two basic blocks are searched for "last instruction sequences" (see page 283, section 4.3, third paragraph, "pass over the whole code is applied for all possible instruction sequence lengths"). The cited prior art passes over the entire code including all basic blocks present (1,2,3, ... , n) looking for all possible lengths including the longest (page 283, section 4.3, third paragraph). This longest sequence is clearly the of the "last instruction sequences" as all sequences in a basic block are under the broadest reasonable interpretation of the claim language some degree of last in a basic block. In other words the, first instruction sequence in a basic block is the final "last instruction sequence". Therefore, the rejections are maintained as indicated above.

Conclusion

4.   Applicant's amendment necessitated the new ground(s) of rejection

presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**.

See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as

set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire

THREE MONTHS from the mailing date of this action. In the event a first reply

is filed within TWO MONTHS of the mailing date of this final action and the

advisory action is not mailed until after the end of the THREE-MONTH

shortened statutory period, then the shortened statutory period will expire on

the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In

no event, however, will the statutory period for reply expire later than SIX

MONTHS from the date of this final action.

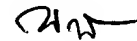## *Correspondence Information*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William H. Wood whose telephone number is (571)-272-3736. The examiner can normally be reached 10:00am - 4:00pm Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571)-272-3756. The fax phone numbers for the organization where this application or proceeding is assigned are (571)273-8300 for regular communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained form either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR systems, see http://pair-direct.uspto.gov. For questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

William H. Wood
Patent Examiner
AU 2193
January 12, 2007

WEI ZHEN
SUPERVISORY PATENT EXAMINER